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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/541,970 | 07/11/2005 | Alix Helene Gicquel | 05-583 | 8766 |
| 20306 7590 02/09/2009 MCDONNELL BOEHNEN HULBERT & BERGHOFF LLP 300 S. WACKER DRIVE 32ND FLOOR CHICAGO, IL 60606 | | | | |
| EXAMINER | | | | |
| STOUTER, KELLY M | | | | |
| ART UNIT | | PAPER NUMBER | | |
| 1792 | | | | |
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| 02/09/2009 | | PAPER | | |

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/541,970

Applicant(s)

GICQUEL ET AL

Examiner

KELLY STOUFFER

Art Unit

1792

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 January 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4 and 6-8 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4 and 6-8 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-8508)
Paper No(s)/Mail Date _____

- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 29 December 2008 has been entered.

Response to Arguments

Applicant's arguments filed 29 December 2008 have been fully considered but they are not persuasive. The applicant argues that Miyayaga et al. does not teach "only" a succession of high and low power states because it teaches also using a magnetic field. However, the limitation of only does not exclude using a magnetic field because it is not directed to sources of creating or amplifying the high and low power states, just that low and high power states generate the plasma. The applicant further argues that Miyayaga et al. does not teach the claimed pressures. However, the plasma pressure may be modified to adjust film formation rates as discussed in columns 2-3 lines 44-15. It would have been obvious to a person having ordinary skill in the art at the time the invention was made to include the plasma pressures within the claimed ranges, since it has been held that where the general conditions of a claim are disclosed in the prior art,

discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 220 F.2d 454, 105 USPQ 223 (CCPA 1955).

Therefore, for at least these reasons, the rejections of the previous office action are maintained.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to

consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miyanaga et al. (US 5626922).

As to claim 1, Miyanaga et al. discloses plasma CVD method using pulsed microwave plasma to deposit a diamond film (abstract and examples). There is a peak power in order to deposit the film in column 3 et seq., and this inherently contains carbon radicals as a film containing carbon is deposited by plasma due to the operation of plasma CVD. Miyanaga et al. does not explicitly disclose optimal substrate temperatures and plasma densities. However, Miyanaga et al. teaches that the high density plasma depends upon the pressure in the chamber and is optimized for coating efficiency (column 2-3 lines 44-15) and that the concentration of product gas per unit volume, in which the product gas would be recognized to be plasma, may be modified to affect film growth (column 5 lines 55-60). Additionally, Miyanaga et al. teaches that the heating of the substrate, and hence the temperature, depends upon the achievement of a uniform and homogeneous film in view of the applicability of the process to industrial mass production (column 6 lines 53-58). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Miyanaga et al. by routine experimentation to include the claimed plasma densities to ensure efficient film growth and an acceptable growth rate and to include the claimed temperatures in order to achieve a uniform and homogenous film, absent evidence

showing criticality for the claimed values. The pulse periods are described in the examples in the claimed ranges and shown in Figures 3A-3C, 4 and 6A-6C, particularly in Figures 3A, 4, and 6B-C. As to the plasma pressures, the plasma pressure may be modified to adjust film formation rates as discussed in columns 2-3 lines 44-15. It would have been obvious to a person having ordinary skill in the art at the time the invention was made to include the plasma pressures within the claimed ranges, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 220 F.2d 454, 105 USPQ 223 (CCPA 1955).

As to claims 2-4 and 6, the hydrogen concentration in Miyanaga et al. depends upon and is adjusted according to the desired pressure in the chamber and the shape of the object being coated (as irregular shapes require higher pressure) in column 5 lines 25-60. Therefore, it would have been obvious at the time of the invention to modify Miyanaga et al. by routine experimentation to include the amounts of hydrogen as claimed (and consequently the relative amounts of hydrogen to carbon in the plasma, and vice versa – one of ordinary skill in the art would realize also that these quantities are estimated) in order to adjust the pressure of the chamber and account for all shapes of coated substrates.

As to claims 1, 7 and 8, peak powers are given within the claimed ranges in the examples. Furthermore, plasma pressure and plasma peak power may be modified to adjust film formation rate as discussed above and in column 2-3 lines 44-15 and both

are hence result effective variables. It would have been obvious to a person having ordinary skill in the art at the time the invention was made to include the plasma peak powers within the claimed ranges, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 220 F.2d 454, 105 USPQ 223 (CCPA 1955).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to KELLY STOUFFER whose telephone number is (571)272-2668. The examiner can normally be reached on Monday - Thursday 7:00-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy Meeks can be reached on (571) 272-1423. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Kelly Stouffer
Examiner
Art Unit 1792

kms

/Timothy H Meeks/
Supervisory Patent Examiner, Art Unit 1792